News and Resources from the National Institutes of Health

Diabetes
Dateline
National Diabetes Information Clearinghouse
Summer 2006

Type 1 Diabetes Studies Begin at 18 Sites

Studies Aim to Preserve Insulin Production in Type 1 Diabetes

Eighteen medical centers spread across three continents have launched a series of new clinical studies funded by the National Institutes of Health (NIH) to determine how to slow or stop the onset or progression of type 1 diabetes in newly diagnosed patients and those at risk of developing the disease.

Two of the studies that are part of the clinical trial series called Type 1 Diabetes TrialNet examine how to safely preserve insulin production in people who were diagnosed with type 1 diabetes in the previous 3 months.

In the first study, participants are randomly assigned to receive either the experimental drug mycophenolate mofetil (MMF), MMF plus daclizumab, or a placebo. In the second study, participants are randomized to receive either Rituximab or a placebo.

TrialNet researchers are also conducting a pilot study to see if nutritional intervention can prevent type 1 diabetes in infants less than 5 months old who have close family members with the disease.

Another study in the series is probing the causes of type 1 diabetes by examining immune and metabolic activity that occurs before diabetes symptoms develop. The study will screen first-degree relatives ages 1 to 45 of those with type 1 diabetes and second-degree relatives ages 1 to 20.

Cutting-Edge Strategies

Type 1 diabetes, previously called juvenile onset diabetes, accounts for 5 to 10 percent of all diagnosed diabetes cases in the United States,

affecting about 1 million people. The disease is caused by a combination of genetic and environmental factors and usually begins during childhood or young adulthood.

"Even though improved treatment for type 1 diabetes has led to longer and healthier lives for those affected, the disease still exacts a terrible toll, both in the burden of care required, and in the complications that can develop after decades of having the disease," said Ellen Leschek, M.D., TrialNet's program director at

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National Institute of Diabetes and Digestive and Kidney Diseases

National Institutes of Health

Department of Health & Human Services · USA

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the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

"We know that residual beta cell function makes diabetes easier to control and reduces the risk of complications," Leschek said. "TrialNet researchers are looking at cutting-edge strategies to preserve the insulin-producing beta cells in trials that are currently underway and are planning trials to look at the possibility of preventing the onset of type 1 diabetes in high-risk people."

TrialNet is funded by the NIDDK, the National Institute of Child Health and Human Development, and the National Institute of Allergy and Infectious Diseases within the NIH. The Juvenile Diabetes Research Foundation and the American Diabetes Association also support the research. ■

Visit *www.diabetestrialnet.org* for more information about the TrialNet studies and how to join them.

Briggs Leaves NIDDK

Josephine P. Briggs, M.D., director of the Division of Kidney, Urologic, and Hematologic Diseases (KUH) at the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), has accepted a position at the Howard Hughes Medical Institute (HHMI) in Chevy Chase, MD.

During her 9-year tenure, Briggs was a strong, active leader for the KUH, the NIDDK, and the National Institutes of Health (NIH). She established the National Kidney Disease Education Program, advocated rigorously and effectively for KUH programs, and recruited top-notch scientists to guide education and research programs. She also was actively involved in several trans-NIH activities, such as the Zebrafish Committee and the Roadmap NIH-RAID program.

Briggs, whose last day at the NIDDK was August 18, is a senior scientific officer in HHMI's science department, where she is involved in leading the HHMI Investigator Program.

Robert A. Star, M.D., is serving as the KUH acting director until a permanent director is named. Star, a nephrologist, has been a senior scientific advisor for translational biology in the KUH division since 1999. He also served as senior advisor for clinical research in the NIH Office of Science Policy and Planning and has been actively engaged in NIH Roadmap initiatives for "Re-Engineering the Clinical Research Enterprise." His intramural research is aimed at earlier diagnosis and management of acute renal failure. ■

Diabetes
Dateline

Diabetes Dateline is published four times a year by the National Diabetes Information Clearinghouse (NDIC). The newsletter features news about diabetes special events, patient and professional meetings, and new publications available from the NDIC and other related organizations.

Subscriptions are free but available only to health professionals. Send subscription inquiries to: National Diabetes Information Clearinghouse, 1 Information Way, Bethesda, MD 20892–3560. This publication is also available online at *www.diabetes.niddk.nih.gov/about/newsletter.htm.*

Nearly One-third of U.S. Adults With Diabetes Don't Know They Have It

The percentage of adults aged 20 and older with diagnosed diabetes rose from 5.1 to 6.5 percent in recent years while 30.1 percent of U.S. adults with diabetes don't know they have it, according to a study by the National Institutes of Health and the Centers for Disease Control and Prevention.

The study found that the number of people with undiagnosed diabetes and pre-diabetes stayed the same.

About 26 percent of adults had a form of pre-diabetes, or impaired fasting glucose (IFG). The study, based on data from the National Health and Nutrition Examination Survey, was published in the June 2006 issue of *Diabetes Care*.

"When you add it all up—those with diagnosed diabetes, undiagnosed diabetes, and pre-diabetes—you get 73 million people with diabetes or on their way to getting it."

Catherine Cowie, Ph.D.
Lead study author and director of the diabetes epidemiology program at the National Institute of Diabetes and Digestive and Kidney Diseases

"With the rising number of people diagnosed with diabetes, we had hoped there would be a corresponding decrease in the number of undiagnosed diabetes cases, but that was not the case," said lead study author Catherine Cowie, Ph.D., director of the diabetes epidemiology program at the National Institute of Diabetes and Digestive and Kidney Diseases. "When you add it all up—those with diagnosed diabetes, undiagnosed diabetes, and pre-diabetes—you get 73 million people with diabetes or on their way to getting it. It's really daunting."

Pre-diabetes, which usually has no symptoms, is dangerous. Many people who have it develop type 2 diabetes within 10 years. Pre-diabetes also substantially raises the risk of a heart attack or stroke even if it doesn't progress to type 2 diabetes, which accounts for up to 95 percent of all diabetes cases and almost all cases of undiagnosed diabetes.

Early dignosis of pre-diabetes is important for preventing or delaying the onset of type 2 diabetes.

"We need to do a better job of getting out there and teaching health care providers to test for pre-diabetes or type 2 diabetes on a routine basis," Cowie said. "And people at risk need to take it upon themselves to get their health care providers to test them."

Diagnosing type 2 diabetes early allows patients to receive treatment preventing complications before the disease progresses too far.

Diabetes risk factors include age, excess weight, family history, belonging to a minority group, and having had gestational diabetes. ■

Researchers also found that

- undiagnosed diabetes and IFG were about 70 percent more common in men than women, especially in non-Hispanic white men
- nearly 40 percent of people aged 65 and older had IFG, which becomes more common with age
- nearly 22 percent of people aged 65 and older had diabetes
- about 13 percent of non-Hispanic blacks age 20 and older had diabetes. Diabetes was twice as common in non-Hispanic blacks compared with non-Hispanic whites.
- about 8 percent of Mexican Americans age 20 and older had diabetes. Because the average age of Mexican Americans is younger than for other groups, the age- and sex-adjusted prevalence of diabetes in Mexican Americans is twice that of non-Hispanic whites and about equal to that of non-Hispanic blacks.

Study Shows No Link Between Tight Diabetes Control and Cognitive Impairment

The landmark Diabetes Control and Complications Trial (DCCT), sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), which followed 1,441 people with type 1 diabetes for a decade until 1993, showed conclusively that tight blood glucose control significantly reduces the risk of developing diabetes complications, such as eye, kidney, and nerve disease.

"The DCCT led to a paradigm shift in the treatment of type 1 diabetes."

Catherine Cowie, Ph.D.
NIDDK director, diabetes epidemiology program

But the DCCT also showed that patients in the trial who kept their blood glucose levels as close to the normal range as possible were three times as likely to suffer episodes of severe hypoglycemia—abnormally low blood glucose levels that can cause confusion, irrational behavior, convulsions, and unconsciousness. This finding raised the fear that although tight blood glucose control may lower the risk of developing other diabetes complications, it also might lead to a long-term loss of cognitive ability.

After following three-quarters of the original DCCT participants for an additional 6.5 years, however, researchers from the Joslin Diabetes Center, in collaboration with investigators at the University of Pittsburgh Medical Center, George Washington University, and the DCCT/EDIC (Epidemiology of Diabetes Interventions and Complications Study) Research Group, found no link between multiple severe hypoglycemic reactions and impaired cognitive function in people with type 1 diabetes.

To determine whether tight control has long-term adverse effects on cognitive function, the researchers examined 1,059 participants in the original DCCT trial: 537 patients receiving intensive therapy with either an insulin pump or three or more daily insulin injections; and 522 patients receiving conventional therapy of one or two injections daily. For the period of this study, 652 patients reported no hypoglycemic, or low blood glucose, events resulting in coma or seizure; 348 reported from one to five events; and 59 patients reported more than five.

All of the patients were evaluated using the same neuropsychological tests that researchers administered during the DCCT trial, tools that analyzed abilities in eight cognitive domains: problem solving, learning, immediate memory, delayed recall, spatial information, attention, psychomotor efficiency, and motor speed. Adjusting for age, sex, years of education, length of follow-up, and the number of cognitive tests taken, researchers found no change in any of the eight areas.

"The DCCT led to a paradigm shift in the treatment of type 1 diabetes," said Catherine Cowie, Ph.D., the NIDDK's director of the diabetes epidemiology program. "Today, more than 20 years after it was launched, it continues to provide invaluable insights." ■

Diabetes Prevention Trial Sheds Light on Metabolic Progression Patterns

Over a period of at least 2 years, glucose tolerance gradually deteriorates as stimulated C-peptide levels slowly decline in a substantial number of people who develop type 1 diabetes, according to a study of metabolic progression patterns to type 1 diabetes. The study, which provided the first systematic analyses of glucose and C-peptide trends preceding the diagnosis of type 1 diabetes, used data from the Diabetes Prevention Trial–Type 1. The data showed that glycemia levels begin to increase at least 2 years before diagnosis, after which glucose levels continue to increase gradually until at least 6 months before diagnosis. Within 6 months of diagnosis, a steeper rise in glucose levels occurs. As the glycemia level increases, fasting C-peptide levels stay constant and even increase at diagnosis. The article, "Patterns of Metabolic Progression to Type 1 Diabetes in the Diabetes Prevention Trial–Type 1," appeared in the March 2006 issue of *Diabetes Care*. ■

NDEP Launches Diabetes Prevention Campaign

Women With History of Gestational Diabetes and Their Children Can Lower Risk

The National Diabetes Education Program (NDEP) has launched a new educational campaign to reduce the risk of developing type 2 diabetes among women with a history of gestational diabetes mellitus (GDM) and their offspring.

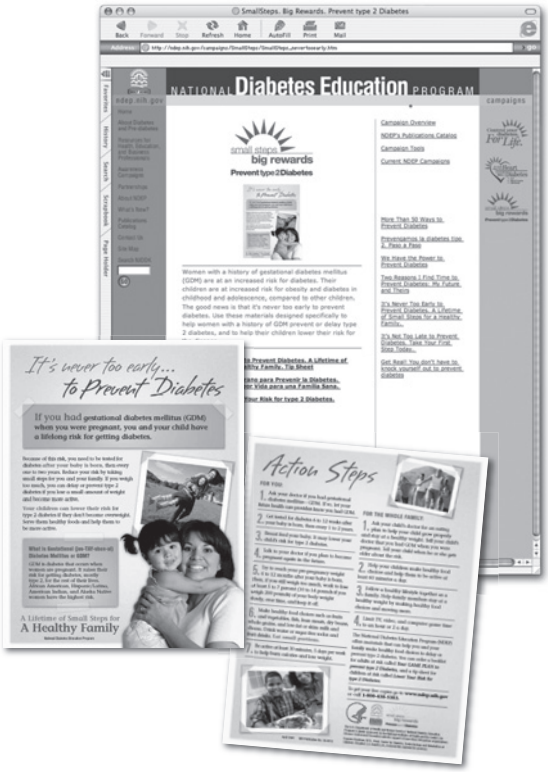
This new campaign initiative is the latest message from the NDEP's *Small Steps. Big Rewards. Prevent type 2 Diabetes campaign.*

The "It's Never Too Early to Prevent Diabetes" campaign focuses on providing women who have had GDM with information that outlines practical steps they can take to prevent or delay type 2 diabetes, such as losing a small amount of weight if overweight, making healthy food choices, and increasing physical activity. This new campaign initiative is the latest message from the NDEP's *Small Steps. Big Rewards. Prevent type 2 Diabetes campaign*.

GDM is a common condition that affects about 7 percent of all pregnancies in the United States. Those whose GDM goes away after delivery have a risk as high as 50 percent of developing type 2 diabetes in the future. Children of mothers with GDM also are at increased risk for type 2 diabetes, as well as obesity.

"Mothers who have had GDM need to know that they and their children have an increased lifelong risk for developing type 2 diabetes," said Deputy Surgeon General Rear Admiral Kenneth P. Moritsugu, M.D., M.P.H. "The risk doesn't go away. By making modest lifestyle changes to lose a small amount of weight—usually by making healthy food choices and being more physically active—women can help prevent or delay the disease. Children can lower their risk for type 2 diabetes by not becoming overweight or obese."

GDM has been increasing around the country, which may reflect rising obesity rates nationwide. New York City, for instance, saw a 46 percent jump in GDM between 1990 and 2002, while the number of cases in northern California increased 35 percent between 1991 and 2000.

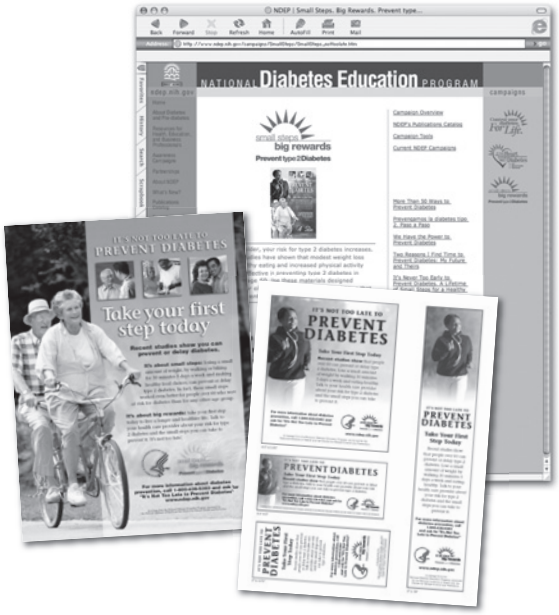


A booklet for adults and tip sheets—in English and Spanish—for both adults and children are available on the NDEP website at *www.ndep.nih.gov*.

Recent research funded by the National Institute of Diabetes and Digestive and Kidney Diseases shows that adults at risk for diabetes can lower that risk by as much as 58 percent through lifestyle changes, including a low-calorie, low-fat diet; and more physical activity. ■

Small Lifestyle Changes Yield Big Rewards in Preventing Diabetes Among Older Adults

Lifestyle changes *can* reduce the risk of developing diabetes, especially for older adults. That is the message the National Diabetes Education Program (NDEP) is trying to get across to people over age 60 through the "It's Not Too Late to Prevent Diabetes" public awareness campaign.

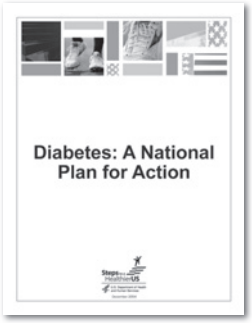


Campaign materials, including tip sheets, posters, and radio and print public service announcements are available on the NDEP website at *www.ndep.nih.gov/campaigns/SmallSteps/SmallSteps_nottoolate.htm*.

The campaign encourages older adults to find out whether they are at risk for type 2 diabetes and to take steps to prevent or delay the disease, such as losing a small amount of weight and getting at least 30 minutes of physical activity five times a week. The Diabetes Prevention Program, a major research study funded by the National Institutes of Health, found that these lifestyle changes reduced the development of diabetes by 71 percent in people aged 60 and older.

Researchers at the National Institutes of Health and the Centers for Disease Control and Prevention recently reported that nearly 22 percent of people aged 65 and older have diabetes (see story on page 3). About 40 percent of adults between the ages of 40 and 74—or 41 million people—have pre-diabetes, which increases the risk for type 2 diabetes, heart attack, and stroke. ■

NIDDK Continues to Distribute National Diabetes Action Plan



To download the plan online, visit *aspe.hhs.gov/health/NDAP/NDAP04.pdf*.

Recognizing that individual action isn't enough to stem the increasing rate of diabetes in the United States, the Department of Health and Human Services devised a national action plan to improve the prevention, detection, and treatment of diabetes. The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) continues to distribute the plan, *Diabetes: A National Plan for Action*, through the National Diabetes Education Program and the National Diabetes Information Clearinghouse.

An advisory committee that included former NIDDK Director Allen Spiegel, M.D., oversaw the creation of the plan, which outlines steps other stakeholders, in addition to individuals, can take to leverage and coordinate resources to fight diabetes, including researchers and professional educators, health care and health insurance providers, employers, communities, schools, the media, and tribal and other government agencies. The plan document also highlights federal diabetes activities and includes patient information about diabetes risk factors, prevention, detection, and care. ■

Diabetes, Heart Disease, and Stroke

The National Diabetes Information Clearinghouse has a publication that alerts people to the important fact that having diabetes or even pre-diabetes puts them at greater risk for heart attacks and strokes and explains how they can lower that risk. The 12-page fact sheet, *Diabetes, Heart Disease, and Stroke*, explains the connection between diabetes and the two complications, identifies the risk factors for heart disease and stroke in people with diabetes, and outlines what they can do to prevent or delay these conditions. It also describes what metabolic syndrome is and how it is linked to heart disease.

To order, please call 1–800–860–8747 or visit *www.diabetes.niddk.nih.gov.*

Updated

The following publications from the National Diabetes Information Clearinghouse have been updated to reflect the most current available diabetes research and data:

- *Diabetes Overview*
- *I Can Lower My Risk for Type 2 Diabetes*
- *What I need to know about Eating and Diabetes*
- *Your Guide to Diabetes: Type 1 and Type 2 (English and Spanish)*

Now Available in Spanish

Two new publications from the National Diabetes Information Clearinghouse are now available in Spanish:

What I need to know about Gestational Diabetes

(Lo que usted debe saber sobre la diabetes gestacional)

This 20-page booklet is aimed at improving care for the hundreds of thousands of women each year who develop gestational diabetes during pregnancy. Written in an easy-to-read style at a fourth- to sixth-grade reading level, *Lo que usted debe saber sobre la diabetes gestacional* features colorful multiethnic illustrations.

What I need to know about Physical Activity and Diabetes

(Lo que usted debe saber sobre la diabetes y la actividad física)

This publication teaches people with diabetes how to manage their blood sugar and cut their risk of long-term complications, such as heart disease and stroke, with physical activity. The 16-page booklet, *Lo que usted debe saber sobre la diabetes y la actividad física*, which discusses aerobic activity, strength training, and stretching, also emphasizes the preventive benefits of exercise for people at risk for type 2 diabetes. ■

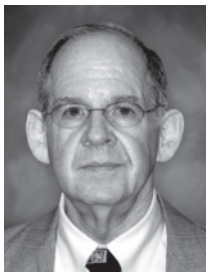
More information and a free copy of the NKDEP *Kidney Connection Guide* are available at *www.nkdep.nih.gov/familyreunion.*

NIDDK Encourages Health Talk at Family Reunions

Health issues are family issues, which is why family reunions present the perfect opportunity to bring them up, according to the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

To raise awareness and promote family discussion of diabetes, high blood pressure, and kidney disease—three conditions that disproportionately affect African Americans—the NIDDK's National Kidney Disease Education Program (NKDEP) has created the *Kidney Connection Guide*. This free resource suggests ways to begin health discussions with family members and includes fact sheets and information about how to create a family health history with the Surgeon General's online tool, "My Family Health Portrait," *www.hhs.gov/familyhistory/download.html*.

Blonde Named New Chair of NDEP



Lawrence Blonde, M.D., F.A.C.P., F.A.C.E., director of the Ochsner Diabetes Clinical Research Unit at the Ochsner Clinic Foundation in New Orleans, is the new chairman of the National Diabetes Education Program (NDEP). A longtime member of the NDEP committees and workgroups, Blonde succeeds James R. Gavin III, M.D., Ph.D., who helped launch the NDEP's first-ever multicultural diabetes prevention campaign.

As the NDEP chairman, Blonde is charged with leading the organization's executive and steering committees, and working with federal, state, and local partners to improve diabetes prevention, diagnosis, and treatment. ■

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